1. Which of the following intervals describes the Domain of the function below?

$$f(x) = -\log_2(x-4) + 8$$

A. $(-\infty, a), a \in [-6.3, -2.6]$

B. $[a, \infty), a \in [7.5, 9.8]$

C. $(a, \infty), a \in [3.4, 4.8]$

D. $(-\infty, a], a \in [-10.6, -4.1]$

E. $(-\infty, \infty)$

---

2. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5(-3x+8) + 6 = 2$$

A. $x \in [337.67, 342.67]$

B. $x \in [-0.33, 5.67]$

C. $x \in [339, 345]$

D. $x \in [-7.67, 1.33]$

E. There is no Real solution to the equation.

---

3. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x-8) - 7$$

A. $[a, \infty), a \in [7.79, 8.59]$

B. $(-\infty, a), a \in [-7.01, -6.36]$

C. $(-\infty, a), a \in [6.35, 7.09]$

D. $[a, \infty), a \in [-8.1, -7.6]$

E. $(-\infty, \infty)$

---

4. Solve the equation for x and choose the interval that contains x (if it exists).

$$13 = \sqrt[3]{\frac{9}{e^{8x}}}$$

A. $x \in [0.55, 0.71]$

B. $x \in [-5.7, -4.98]$

C. $x \in [-0.38, -0.29]$

D. There is no Real solution to the equation.

E. None of the above.

---

5. Solve the equation for x and choose the interval that contains x (if it exists).

$$19 = \sqrt[5]{\frac{15}{e^{4x}}}$$

A. $x \in [2, 7]$

B. $x \in [-1.8, 0.2]$

C. $x \in [-24.43, -21.43]$

D. There is no Real solution to the equation.

E. None of the above.

---

6. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x+8} - 6$$

A. $[a, \infty), a \in [-6, -2]$

B. $(a, \infty), a \in [-6, -2]$

C. $(-\infty, a], a \in [5, 14]$

D. $(-\infty, a), a \in [5, 14]$

E. $(-\infty, \infty)$

7. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$3^{4x+4} = \left(\frac{1}{125}\right)^{2x-3}$$

A. $x \in [-0.28, 3.72]$

B. $x \in [-3.5, -0.5]$

C. $x \in [-1.5, 0.5]$

D. $x \in [1.05, 6.05]$

E. There is no Real solution to the equation.

8. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5(3x + 5) + 5 = 2$$

A. $x \in [4.6, 9.2]$

B. $x \in [-86, -82]$

C. $x \in [-3.8, -0.7]$

D. $x \in [-80.1, -77.2]$

E. There is no Real solution to the equation.

9. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$2^{3x-3} = 25^{2x-4}$$

A. $x \in [2.1, 4.7]$

B. $x \in [-0.8, 2.1]$

C. $x \in [-2.3, 0]$

D. $x \in [-13.4, -9.8]$

E. There is no Real solution to the equation.

10. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x-9} - 1$$

A. $[a, \infty), a \in [-1.7, 0.7]$

B. $(-\infty, a], a \in [0.1, 2.5]$

C. $(-\infty, a), a \in [0.1, 2.5]$

D. $(a, \infty), a \in [-1.7, 0.7]$

E. $(-\infty, \infty)$